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CHANGE IN RESEARCH COMMITTEE

Owing to the resignation of Mr. E. G. Lovering from the Research Committee, I have appointed Past President Philip Uhl to fill the vacancy for the remainder of the year.

Mr. Lovering resigned on account of his inability to take time from his business for a trip of so long a distance.

Yours truly,

WALTER J. ALLEN,
Supreme President.

MONTHLY REVIEW

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EDITORIAL

CO-OPERATION

We recently received a letter from our humorist and poetic member, H. J. Richard, who said the REVIEW "Groweth long in wisdom and short in nonsense," and enclosed the verses found in the November issue of REVIEW, page 15, with the inference that they are nonsense," being fearful that nothing to laugh at would make the face of the plater "over long," or recognizing a need he proceeded forthwith to fill it. This is real co-operation and we would like to suggest that other members go and do likewise.

What is there about the REVIEW that you do not like? I imagine I hear some platers say there is too much technical matter. If this be so, why not co-operate as our friend Richard did and send in some material less technical in nature, yet instructive to the average plater, or if you see other ways in which improvements should be made? Co-operate and send along the needed matter. We do not even hope to please every member; that would be impossible, but we do want to print that which will be good reading to the majority of the members and we ask your active co-operation to make the REVIEW what you think it should be, and when you decide what is most needed, supply the need by sending in the kind of matter that you think is lacking. This is the co-operation that will result in good to the A. E. S.

BRIGHT GOLD PLATING

By Royal F. Clark

In the production of the bright gold finishes of 14 karat, 18 karat green and 24 karat color, which do not receive subsequent buffing or burnishing, either by hand or barrel, but are lacquered, the solutions being used every day over a long period of time without entirely renewing the electrolyte; the electroplater is required to demonstrate his skill in manipulating gold solutions; to which I would add an electro cleaning solution and a bright nickel bath.

When producing the bright gilt finish, where the articles have an exceedingly high lustre, and which must be maintained through the cleaning and gold plating in a 24 karat gold bath, if certain precautions are not taken the finish will not be what is desired, especially if the articles are made of brass or copper.

In handling large quantities of work in these finishes I prefer to flash the work in a warm, bright nickel solution prior to gold plating. I find that a larger quantity can be plated at each immersion in the gold bath, even when the gold content of the solution has become low. Also when the electrolyte is contaminated with copper from the wires used in wiring the work, which will cause the deposit to have a lower karat color, by having the nickel plated base and agitating the work a lighter color can be secured.

A gold solution which has had nickeled work plated in it will retain its original color over a much longer period.

The writer used the same 24 karat gold solution for 3½ consecutive years, replenishing the metal by the 12 ounces of gold anodes, each of the 6 anodes weighed 2 ounces, and adding from time to time sodium cyanide, phosphate of soda, hyposulphite of soda, caustic potash and bi-sulphite of soda.

The articles plated in the above solution were scissors and shears made from cast iron, polished and plated in a nickel solution for one hour, buffed to a high lustre and gold plated on the handles only.

Very often the articles had been nickeled many weeks before being gold plated, which made the cleaning more difficult. An electric cleaner is absolutely essential for this class of work and may be made from any of the well-known cleaners.

Work that has been nickeled seems to cause the gold to be deposited in a bright state.

Freshly made nickel carbonate dissolved in a strong solution of sodium cyanide and added in very small quantities from time to time tends to brighten and harden the deposit. When a 24 karat gold solution begins to give a 18 or 14 karat color, by adding a small quantity of the nickel-cyanide solution the color is improved somewhat to a lighter shade.

To make the nickel brightener take single nickel salts, dissolve in hot water, add soda ash to precipitate the nickel to carbonate. Remember that only one-half the amount of soda ash is needed as compared with sal soda. For instance, if 5 lbs. of single nickel salts is used, only 2½ lbs. of soda ash is needed to precipitate the nickel, while if sal soda is used it will take 5 lbs. or more. Wash the nickel carbonate several times with hot water.

To one gallon of warm water add 1 lb. of sodium cyanide, when dissolved add moist carbonate of nickel until the solution is saturated or until effervescence ceases, then add a little more cyanide until the solution becomes a clear amber color. This stock solution should be kept in glass-stoppered bottles.

AGITATION OF HOT NICKEL SOLUTIONS

Chas. C. Martel

In the year 1911, the writer was instructed by the head of the Research Laboratory to install a Hot Nickel Solution for experimental work. The tank assigned me was 160 feet away from the generator. Bus bars 2¼ inches in diameter run from main switch board (which was near the generator) to the tank. At the tank there was another switch board consisting of 1500 ampere knife switch, 1500 ampere Amperemeter and Voltmeter. The arrangement of tank rods were as follows:

Anode rods 3
Cathode rods 2

Directly under the cathode rods on bottom of tank were two air lines used for agitating the solution during deposition. Then through center of tank on bottom, between the air lines, was installed a lead coil for heating electrolyte.

Composition of Electrolyte

Ni SO4	20 ounces
Na CL	2 "
H3 BO 3	3 "
H2 O	1 gallon

EXPERIMENT (1)—Nickel Shot was used for anodes

The arrangement for holding the shot nickel consisted of heavy canvas bags reinforced by a maple frame which was jointed together, no nails or screws being used, so as to avoid introducing any other metal than nickel in the Electrolyte. Inside of the canvas bag and maple frame 96 to 97% nickel anodes was suspended and the nickel shot packed around the nickel anodes. The conditions when the first load was put into the tank were as follows:

Air pressure not taken—Agitation very strong, temperature 200F.

Number of canvas bags loaded with nickel shots, 24

Weight of nickel shot	1500 lbs.
Weight of nickel Anodes	328 lbs.
Total	1828
Piece parts in load	2880
Square inches per piece part	3
Piece part load	8640 square inches
Racks to hold piece parts	12
Square inches per rack	54
Rack load	54 x 12-648
Full load	9288 square inches
Voltage	5
Amperes	650
Load square feet	60
Amperes per sq. ft.	10.9

Time 6 minutes

The first load in appearance was soft, bright, and white and passed inspection department's requirements, but was a little rough. After the first two or three loads the electrolyte started to get lower in metallic content, and higher with acid to such a degree that the piece parts hanging in center of racks did not get any deposit, and in appearance were

dark and blotched or spotted, only the piece parts hanging on edges of the racks being white and bright, but pitted. Then came the welcome order from the engineering department to discontinue the use of shot nickel. That was the end of the first experiment.

EXPERIMENT (2). With hot nickel solution was as follows:

A new electrolyte was made, using same proportions as before for experiment No. 1. Also same unit and equipment. Conditions when first load was put in were as follows:

Agitation—Medium
Cast anodes—96-97%
Number of anodes in tank 60
Weight of anodes..... 22 lbs.
60x22—1320
Anode surface exposed
facing work four sides..7520 square inches
Piece parts in load.....2880
Square inches per piece part 3
2880x3—8640 square inches
Rack to hold piece parts.. 12
Square inches per rack... 54
54x12—648
Square inches full load...9288
Voltage 4.5
Amperes 740
Temperature 110F

Appearance of work was good, being bright, white and passed inspection, but rough.

Time .....6 minutes

About the seventh load the work began to appear dull and darker bordering on a grey color excepting the piece parts hanging at edges of rack. Then agitation was stopped. Temperature lowered to 90F. Replenishing of metal in solution and lowering acidity was done by the use of nickel carbonate. This unit was continued in use about ten weeks, then the order from the engineers was to discontinue the use of same on account of porosity of deposit. That was the end of experiment No. 2.

EXPERIMENT (3) was as follows:

A new electrolyte same as previously mentioned was made up and same tank used, only the air line was taken out and mechanical agitation was arranged by using triple compound leverage and having the work rods on grooved rollers.

Conditions when first load was run were as follows:

Piece parts in load 1440
Square inches per piece part. 3
1440x3—4320
Racks to hold piece parts.... 6
Square inches per rack..... 54
54x6—324

Racks and piece parts. Total 4644 sq. inches
Square inches full load
Agitation mechanical
Voltage 5.5
Amperes 420
Temperature 90F
Reports from inspection department O. K.
Time 5 minutes
Weight of deposit on test piece 8.6 milligrams per square inch
Result of experiment No. 3
Deposit white, soft, easy to buff.

This solution was nearly self-sustaining, replenishing with new solution only to make up loss by training.

Conclusion:

It was found that the fumes and steam thrown off by experiment Nos. 1 and 2 corroded the rods to such an extent that it was nearly impossible to keep the contacts clean. Consequently, when experiment No. 3 was run at temperature 90°F. it was easy to maintain clean contacts, thus affording better anode corrosion and higher current efficiency at cathode. Also the piece parts plated during experiments Nos. 1 and 2 was rough iron, full of seams and had been pickled in a sulphuric acid pickle, the acid not being thoroughly washed from piece parts caused the formation of iron sulphate in the pores and seams which was not all reduced when the work was passed through the lye

as electric cleaners were not used at that time by the concern I was employed by, which accounts for large increase of iron in the electrolytes. The reduction, no doubt, being caused by the hot solutions and hydrogen thrown off, as the loss of metal from solution did not correspond with the increase of acid.

It was assumed that the good results from experiment No. 3 were due by using lower temperature, thoroughly washing piece parts after pickling and using a cyanide solution for neutralizing any acid that remained in pores or seams, also care in rinsing before plating and not overloading tank, also using mechanical agitation.

A little over a year ago the writer installed two hot nickel solutions, which are in use at this writing. Each tank holds 4754 liters—actual amount of solution is 4651 liters to each conveyor—1980 lbs. nickel anodes each. Tank lining is sheet lead with burned seams. Lead coils are used for heating. Steam pressure, 10 lbs. No trouble has been experienced by using lead for coil and lining.

The nickel solution we are using is Prof. Watts' single sulphate solution:

Ni SO_4. $7H_2O$	240 Grams
Ni CI_2. $6H_2O$	20 "
H_3BO_3	20 "
Water	1 liter

Maintained at a temperature of 120F to 165F.

Current density—80 amperes per sq. ft. to 120 amperes per sq. ft.

Electro motive force—6 volts at tank.

On account of large parts being plated, anodes are placed 12" from cathode line, requiring high voltage. We are using cast nickel anodes of the following nominal composition:

Nickel (min.)	95.0%
Carbon (max.)	1.5%
Silicon	Trace
Copper	None
Iron (max.)	2.5%
Tin (max.)	1.0%

On two different occasions we have noticed the deposit was brittle—that was about three months after we started

using hot nickel solution. Then sample of solution was tested and found to contain a very high percentage of iron. The next move was to take a sample of deposit and make a test for iron. We found the deposit contained 7% of iron.

On investigation it was found that a number of cast iron parts fell off thework racks while passing through conveyer and stayed on bottom of tank for some hours, as we only removed parts from bottom of tanks each evening, on account of stirring up solution.

Since then a filter that will take care of all the nickel solutions in the plating department has been installed, consisting of a centrifugal pump that will circulate 18 to 25 gallons of solution per minute through a filtering tank of 280-gallon capacity, thus maintaining clean solutions to plate with at all times.

Chicago Branch, Chicago, Ill.

RUST-PROOFING OF STEEL BODIES FOR AUTOMOBILE HEADLAMPS AND TAIL LAMPS; ALSO PREPARING SAME AND DIE-CASTING BODIES FOR ENAMELING

By Jacob Hay, C. M. Hall Lamp Co., Kenosha, Wisconsin

In writing this paper it was the writer's intention to bring out his experience of preparing steel parts for the enameling process and also die casting such as are used in our factory for Cowl lamps.

In hunting for information on this subject I often thought of the remarks that our past editor made at the Chicago banquet. In his address he brought out the fact that there should be more written about the practical methods as applied by the platers of the day in their daily experience, as plater's executives, "to give this in plain English," as Walter said it, "Give us facts and less formulas."

I might say that it is almost impossible to get any information on this subject, so it was up to the writer to find his own solution to this problem.

In preparing steel bodies for enameling it appears to be a very simple matter, but it remains a fact that no matter how carefully you clean these parts before enameling, they will rust after enameling if exposed to air and atmospheric

condition. The rust may not appear on the surface of these parts, but you would soon notice that the enamel rises and cracks from underneath, the finish is then ruined.

After investigating all possible reasons for this cause, such as the cleaning process, rinse water, methods of drying, air system and possibly anything that might cause this condition, so far as the mechanical features are concerned, the changes in weather were also considered and studied with the same results, that these parts would rust and therefore causing a large expense due to the fact that a large per cent. would always be returned by the customers because of rust.

The next thing the writer investigated was the condition of steel. He found that the coarse structure of steel was apt to rust quicker than the finer grades of steel. Heating these steel bodies to 270 degrees Fahrenheit would help but would not overcome the rusting. Copper plating these parts in cyanide copper solution was tried for a period of three months, it then proved to be an absolute failure. Brass plating acted the same as copper, it would not improve the parts; in fact, it made it worse, as there appeared trouble on the surface when exposed to extreme heat of 270 or 350 degrees Fahrenheit. If the copper or brass plate was not absolutely perfect the plate would rise, the enamel get brittle and then flake off. Zinc plating would prevent rusting, but behold, the enamel would not stick to the surface any length of time, the enamel would get brittle and flake off. So far I have been unable to get Japan enamel that would adhere to zinc plated steel parts. Cadmium worked out satisfactorily for both rust and enamel, but the expense of cadmium has to be considered at all times, so it could not be used. We then decided to nickel plate all of our parts before the enameling process. The results are far better than we expected them to be. We improved our product 100 per cent. in finish and quality and the rejections are very small.

I may say right here that all parts nickel plated before enameling must have a perfect coat of nickel as far as adhesion is concerned or else the heat of the baking ovens will rise this nickel coat and all labor spent on this operation will be wasted and the bodies will have to be refinished. All

steel parts come to the plating department in very rusty and corroded condition, due to the fact that soldering operations are necessary before finishing. These parts are then pickled in acid sodium sulphate (nitro cake), then in hot electro cleanser with reverse current, then plated on hot copper solution, nickel plated for twenty minutes in nickel solution heated to 110 degrees Fahrenheit at 5 volts, tank is agitated by revolving motion of cathode and compressed air. These parts are then dried at 200 degrees Fahrenheit, rubbed with sandpaper and dusted with air brush, then enameled with two first rubber coats and one finishing varnish.

In the process of enameling die cast bodies the writer always found that in the baking operation, even at a low temperature, the enamel will get brittle and blister or get pourous and flake off in very short time, and will also form bubbles which will appear like grease spots on surface of such castings, even if the best possible care has been taken in cleaning the same. We tried to heat these castings before enameling, but this did not overcome our trouble in the enameling department.

We then decided to nickel plate all of our die castings with the results that all our troubles are over and we are now producing a finish that will stand up under any condition. We clean our die casting in electro cleaner. Hot copper three minutes nickel plate. Strike before enameling. It is sometimes necessary to enamel zinc parts in our factory in order to get a finish that will stand up on zinc. We prepare these parts in the following manner:

All zinc parts are dipped in the following solution:

1 quart of chloride of copper
1 quart of nitrate of copper
1 quart of sal ammoniac

dissolved in 64 parts of water, to this mixture add 1 part of hydrochloric acid. This will color the zinc a dull gray in 12 hours. The enamel adheres to this surface in perfect condition.

The writer wishes to hear from the fellow members on this subject, as he feels there might be better methods of doing this class of material.

U. S. TABLES OF WEIGHTS AND MEASURES

1. Length.

12 inches(in)	= 1 foot(ft)
3 feet	= 1 yard(yd)
5½ yards	= 1 rod(rd)
16½ feet	= 1 rod
320 rods	= 1 mile(mi)
1760 yards	= 1 mile
5280 feet	= 1 mile

2. Surface.

144 square inches (sq. in.)	= 1 square foot
9 " feet	= 1 " yard
30¼ " yards	= 1 " rod
272¼ " feet	= 1 " rod
160 " rods	= 1 acre(A).
4840 " yards	= 1 acre

3. Volume—Cacapity.

Liquid Measure.

4 gills(gi)	= 1 pint(pt)
2 pints	= 1 quart(qt)
4 quarts	= 1 gallon(gal)
16 fluid ounces	= 1 pint
128 " "	= 1 gallon
231 cubic inches	= 1 gallon

Apothecarie's Fluid Measure.

1 drop of water is about 1 minim	
60 minims(m)	= 1 fluid dram
8 fluid drams	= 1 " pint
16 " ounces	= 1 pint
8 pints	= 1 gallon

4. Weight.

Avoirdupois Weight.

437½ grains(gr)	= 1 ounce(oz)
16 ounces	= 1 pound(lb)
7000 grains	= 1 pound
2000 pounds	= 1 ton(T)

Troy Weight.

24 grains	= 1 pennyweight (pwt)
20 pennyweights	= 1 ounce
480 grains	= 1 ounce
12 ounces	= 1 pound
5760 grains	= 1 pound

METRIC SYSTEM OF WEIGHTS AND MEASURES

1. Length.

10 millimeters	= 1 centimeter(cm)
10 centimeters	= 1 decimeter(dm)
10 decimeters	= 1 meter(m)
10 meters	= 1 dekameter(Dm)
10 dekameters	= 1 hektometer(Hm)
10 hektometers	= 1 kilometer(Km)
10 kilometers	= 1 myriameter(Mm)

2. Surface.

100 square millimeters	= 1 square centimeter
" " centimeters	= 1 " decimeter
" " decimeters	= 1 " meter
" " meters	= 1 " dekameter
" " dekameters	= 1 " hektometer
" " hektometers	= 1 " kilometer
" " kilometers	= 1 " myriameter

3. Volume.

1000 cubic millimeters	= 1 cubic centimeter(cu.cm.also cc)
1000 " centimeters	= 1 " decimeter(cu.dm.)
1000 " decimeters	= 1 " meter(cu.m.)
1000 " meters	= 1 " dekameter (cu.Dm.)
1000 " dekameters	= 1 " hektometer(cu.Hm.)

4. Weight.

10 milligrams(mg.)	= 1 centigram(cg.)
10 centigrams	= 1 decigram(dg.)
10 decigrams	= 1 gram(g)
10 grams	= 1 dekagram(Dg)
10 dekagrams	= 1 hektogram(Hg)
10 hektograms	= 1 kilogram(Kg)

5. Capacity.

10 milliliters	= 1 centiliter(cl)
10 centiliters	= 1 deciliter(dl)
10 deciliters	= 1 liter(L)
10 liters	= 1 dekaliter(Dl)
10 dekaliters	= 1 hektoliter(Hl)
10 hektoliters	= 1 kiloliter

TABLES OF EQUIVALENTS OF THE METRIC AND U. S. WEIGHTS AND MEASURES

Lengths

Millimeters	Inches	Centimeters	Inches	Meters	Feet
1	0.0393	1	0.3937	0.3048	1
2	0.0787	2	0.7874	0.6096	2
3	0.1181	2.5400	1	0.9144	3
4	0.1574	3	1.1811	1	3.2808
5	0.1968	4	1.5748	1.2192	4
6	0.2362	5	1.9685	1.5240	5
7	0.2755	5.0800	2	1.8288	6
8	0.3149	6	2.3622	2	6.5616
9	0.3543	7	2.7559	2.1336	7
25.4001	1	7.6200	3	2.4384	8
50.8001	2	8	3.1496	2,7432	9
76.2002	3	9	3.5433	3	9.8425
101.6002	4	10.1600	4	4	13.1233
127.0003	5	12.7000	5	5	16.4041
152.4003	6	15.2400	6	6	19.6850
177.8004	7	17.7800	7	7	22.9658
203.2004	8	20.3200	8	8	26.2466
228.6005	9	22.8600	9	9	29.5275

Areas

Square Centimeters	Square inches	Square decimeters	Square inches
1	0.1550	1	15.50
2	0.3100	2	31.00
3	0.4650	3	46.50
4	0.6200	4	62.00
5	0.7750	5	77.50
6	0.9300	6	93.00
6.452	1	6.452	100.00
7	1.0850	7	108.50
8	1.2400	8	124.00
9	1.3950	9	139.50
12.903	2	9.290	144.00
19.355	3	12.903	200.
25.807	4	19.355	300.
32.258	5	25.807	400.
38.710	6	32.258	500.
45.161	7	38.710	600.
51.613	8	45.161	700.
58.065	9	51.613	800.
		58.065	900.

Volume

Cubic centimeters	Cubic inches	Cubic centimeters	Cubic inches
1	0.0610	16.3872	1
2	0.1220	32.7743	2
3	0.1831	49.1615	3
4	0.2441	65.5486	4
5	0.3051	81.9358	5
6	0.3661	98.3230	6
7	0.4272	114.7101	7
8	0.4882	131.0973	8
9	0.5492	147.4845	9

Capacity

Milliliters (cc)	U. S. liquid ounces	Liters	U. S. liquid quarts	Liters	U. S. liquid gallons
1	0 0338	0.9463	1.	1.	0.2641
2	0.0676	1.0000	1.0566	2.	0.5283
3	0.1014	1.8927	2.	3.	0.7925
4	0.1352	2.	2.1133	3.7854	1.
5	0.1690	2.8390	3.	4.	1.0566
6	0.2028	3.	3.1700	5.	1.3208
7	0.2367	3.7854	4.	6.	1.5850
8	0.2705	4.	4.2267	7.	1.8491
9	0.3043	4.7317	5.	7.5708	2.
29.574	1	5.	5.2834	8.	2.1133
59.147	2	5.6781	6.	9.	2.3775
88.721	3	6.	6.3400	11.3563	3.
118.295	4	6.6245	7.	15.1417	4.
147.869	5	7.	7.3967	18.9271	5.
177.442	6	7.5708	8.	22.7126	6.
207.016	7	8.	8.4534	26.4980	7.
236.590	8	8.5172	9.	30.2834	8.
266.163	9	9	9.5101	34.0689	9.

Mass or Weight

Grams	Grains	Grams	Avoirdupoid Ounces	Grams	Troy ounces
0.0648	1.	1.	0 0352	1.	0.0321
0 1296	2.	2.	0.0705	2.	0.0643
0.1944	3.	3.	0.1058	3.	0.0964
0.2592	4.	4.	0.1411	4.	0.1286
0.3239	5.	5.	0.1763	5.	0.1607
0.3887	6.	6.	0.2116	6.	0.1929
0.4535	7.	7.	0.2469	7.	0.2250
0.5183	8.	8.	0.2821	8.	0.2572
0.5831	9.	9.	0.3174	9.	0.2893
1.	15.4324	28.3495	1.	31.1034	1.
2.	30.8647	56.6991	2.	62.2069	2.
3.	46.2971	85.0486	3.	93.3104	3.
4.	61.7294	113.3981	4.	124.4139	4.
5.	77.1618	141.7476	5.	155.5174	5.
6.	92.5941	170.0972	6.	186.6208	6.
7.	108.0265	198.4467	7.	217.7243	7.
8.	123.4589	226.7962	8.	248.8278	8.
9.	138.8912	255.1457	9.	279.9313	9.

Useful Factors

To convert:

Grams to grains multiply by	15.432
Grams to ozs. avoid, multiply by	0.0352
Grams to ozs. Troy multiply by	0.0321
Grains to grams multiply by	0.0648
Avoid. ozs. to grams multiply by	28.35
Troy ozs. to grams multiply by	31.10
Troy ozs. to ozs. avoid. multiply by	1.0971
Avoid. ozs. to ozs. Trop multiply by	0.9115

To convert: "Grams per litre to percentage by weight," divide the grams per litre by 10 times the specific gravity of the solution. Thus a solution with a specific gravity of 1.15 containing 50 grams per litre would equal:

$$\frac{50}{1.15 \times 10} = 4.35\%$$

BRANCH NEWS

Dayton Branch

The regular monthly meeting of the Dayton Branch was held at the Y. M. C. A. on December 2. Efforts of the Program Committee are evidently proving successful, for this meeting was the best held this season in attendance. Personal letters and talks at every meeting on loyalty, interest and the benefits of regular attendance appears to be stimulating the members to regularity and to persuading habitually absent ones to attend.

After the regular business and usual fifteen minutes of questions and discussions the evening's program was filled by a talk on "Polishing and Buffing Heater Reflectors," by Mr. C. Vanderau of the Westinghouse Electric Products Company of Mansfield, Ohio. The subject was enthusiastically received and the discussion a lively one. Among other things it emphasized the necessity for careful study and analysis by the plater of the materials with which he is working and the processes involved in order to meet the demands of the high speed production necessary today.

After the program and discussion a project for the welfare of the electro-plater, the A. E. S. and metal finishing in general was proposed by Mr. M. G. Kopf. The idea was well received and a committee appointed to investigate its feasibility.

Mr. R. C. Suman, our president, concluded the meeting by describing the trip through the American Rolling Mills Company of Middletown, Ohio, made by the Dayton Branch in November. A letter of thangs was voted as an appreciation for the trip and the dinner following.

Dayton Branch Meeting for January

The Dayton Branch was honored by an address on "Radium—Its Properties and Uses," by Franklin I. Shroyer, M.D., of Dayton. This meeting, held at the Y. M. C. A., was the most interesting had for some time. The doctor not only discussed the medicinal value of radium and its salts, but likewise its practical application to commercial work. He showed a keen appreciation of its possibilities in the metal working field, and even ventured a prediction that in time to come the electro-plater will be greatly concerned with radium reactions in his work. In this connection he called to mind the research work which is being done by scientists on the transmutation of the elements, i. e., the changing of one metal into another. This, contrary to newspaper articles, has as yet not been accomplished, but indications are more favorable today than ever.

Another important result of the lecture brought out in the discussion was the use of radium in the treatment and cure of skin diseases and burns peculiar to the electro-plater. The doctor showed great interest in this as an industral hazard worthy of the medical man's attention. Arrangements are being made, with the assistance of Dr. Shroyer, to bring some cases to his attention for treatment and observation. It is hoped that the Dayton Branch will have something quite favorable to report to the society in the cure of these troublesome itches and ulcerous burns. A definite research will be made in the matter. If there are any members

suffering from these sources or if they have any information regarding them, please get in touch with the secretary of the Dayton Branch. Any suggested radium treatment will be gratis and applies to all engaged in electro-plating.

At the conclusion of the discussion several radium needles were shown, as well as a specimen viewed by each member from which the star-like particles shot off forever by radium could be plainly seen.

The regular business session heard a report of the committee appointed at the last meeting to investigate a project proposed for the advancement of the interests of the electro-plater and educating the public to his importance and place in the industrial world. The members voted that the project be carried out at once. All that can be reported at this time is, Watch the Dayton Branch for the biggest and greatest thing that was ever originated for the benefit of the plater and the industry and the A. E. S.

Detroit Branch

Regular meeting of Detroit Branch, A. E. S., held in Old Colony Club, second floor Tullar Hotel, Friday, January 5, 8 P. M., E. G. Lovering presiding in the absence of O. H. Phelps. Minutes of previous meeting read and approved. Communications from F. J. Hanlon, E. G. Lovering, J. B. Ford Company. Visitor, A. E. Murphy, chemical and mechanical engineer for Shepard Metal Company, now engaged in research and experimental work for that company, who employ about 300 polishers and buffers, perhaps the largest department in the country, if not the entire world. Mr. Murphy took an active part in the discussions under good of the order.

Mr. A. J. Fritz told of verdigris developed upon brass-plated steel flanges that had a paper washer impregnated with a compound unknown. Other brass-plated flanges, without washer, did not show the verdigris, which occurred after basement had been flooded prior to inventory, and discovered during that period.

Question--Will increase of anodes surface, of perhaps 20 per cent., to restore the amount that had been deposited upon cathode, or enriched the solution, help the throwing power of same? resulted in a tie vote, and will be further discussed and result given out after it has been discussed in the various branches. E. G. Lovering read a paper from Bureau of Standards at Washington upon nickel-plating specifications for plumbing supplies. Consensus of opinion was that it was not so much the thickness deposited as it was the amount remaining after nickel buffing.

Mr. J. A. Murphy told of a solution he has perfected after seven years' research work that will be patented by Henry Ford Company for him, with shop rights reserved by that company. Mr. Murphy states he can deposit nickel upon a high-buffed, copper-plated surface in one-half to two and one-half hours, thickness up to 1½ thousands, that required no nickel coloring and cannot be told from a surface obtained by color-buffing. He certainly has discovered something valuable. Meeting adjourned at a late hour.

Bridgeport Branch

Report of our open meeting held on December 15, with our president, J. W. Slattery, presiding. The speaker to address us on that evening was Mr. F. Graue of the Magnus Chemical Company, who spoke on cleaners, their uses, contents and types of cleaners used for various work. One of the points brought out by the speaker was the use of a double-throw switch, making a better and cleaner surface to plate on, after answering various questions, which were many and varied. An enjoyable evening was had by all present. There were some fifty present.

Report of regular meeting held in our rooms, 258 John street, January 5, 1923: Meeting called to order by 8:10 P. M. After the regular order of business da been taken up bills and communications read and approved, discussions were then in order, particularly the article on "Plating—Its Past, Present and Future," by Mr. Joseph Hass, jr., appearing in the Metal Industry, which brought out some very warm comments from the various members present. Being no further business to transact, meeting adjourned 10:15 P. M., to meet again on January 19.

Grand Rapids Branch

Our last meeting, which was held January 10, and called to order by our president, Mr. Van Dyke, was well attended.

Our banquet committee reported March 24 as the date for our next banquet.

Mr. Frank Rushton, our guest for the evening, was called upon for a few remarks and gave us a very interesting and instructive talk on his trip to Mexico.

The question, What is the white coating which forms on brass anodes and how to keep them clean? came up for discussion.

It was the opinion that the white coating was zinc oxide and that it would take about 4 oz. of free cyanide to keep them clean, providing the work to be plated would stand that much. It was also advised to use one sheet brass anode in the tank to test the free cyanide.

Grand Rapids Branch met Wednesday, the 13th, at the Vocational High School, and after the regular order of business, which included the appointing of a committee to arrange for our next annual banquet, the question of filteration of nickel solutions was taken up. These proved to be very interesting and instructive to all.

Newark Branch

Newark Branch, A. E. S., held its regular meeting on Friday evening, January 5, 1913, O. J. Sizelove occupying the chair and calling the seventeen members present to order at 8:15 P. M. After the routine of business was dispensed with, Mr. H. H. Smith, chairman of the Banquet Committee, had announced that our fifth annual banquet would be held on Saturday, April 21, 1923, at Atchel-Stetter's, with an afternoon educational open session, and sixteen members have signified their intention of writing a paper on electroylating to be read and discussed at the afternoon meeting.

Mr. DeWitt Moore read a paper upon the "Copper Plating of Phono-

graph Master Records," exhibititng specimens of exceedingly thick copper deposits which were very smooth.

Owing to the illness of Librarian Edw. W. T. Faint his paper entitled "Master Electroplaters" was not read. We hope that Mr. Faint will be able to read his paper at our next meeting. Meeting adjourned at 10:30 P. M.

St. Louis Branch

At our regular meeting held on December 5, much time was given to the following report from E. J. Musick, chairman of banquet committee.

In the afternoon the eductional program will have full swing under leadership of G. S. Robins. Mr. Guy White, graduate chemist and assistant superintendent of the National Enameling and Stamping Company, will give a talk on "Physical and Chemical Properties of Steel," which will be open to questions and discussions, as will a paper from E. W. Heil, the Kansas "wiz," on "Resistances." Since Ed. has had experience with a "bucking broncho" on wheels he claims to know just what his subject means. Other papers will also be presented.

While this meeting is in progress the ladies will be entertained. The banquet will begin at 6:30 P. M. Short addresses will be made by several. Supreme and Past Supreme officers, as well as the founder.

The entertainment will be good, and Ed. Musick says the jazz to be furnished by Deck's Dixie Orchestra is the best to be had.

Naturally we will invite our employers, and our friends, the latchstring is out.

All of this takes place on Saturday, January 13, at American Annex Hotel.

After putting the stamp of approval on this report, G. S. Robins demonstrated a method to ascertain the amount of free cyanide in solutions and E. Weil gave us another valuable lesson on "Color Indicators."

New York Branch

The regular meetings of N. Y. Branch were held on December 8 and 22, at Broadway Central Hotel.

The banquet committee are working hard to make the coming banquet the best ever held, the banquet to be held at Aldine Club, Broadway and 23d Street, New York City, on Saturday, February 17, 1923,. An afternoon session will be held and papers discussed.

A ladies' committee is formed to take care of lady visitors and refreshments will be served.

A good entertaining program is being formed, with plenty of pleasant surprises for all.

Indianapolis Branch

Indianapolis Branch held its regular meeting January 13, with President Hennessey presiding. As matters have been lagging in the branch in regard to the educational features, a great part of the time was taken up discussing ways and means of stirring up the interest in the members. Prof. Hoffman (honorary member), in behalf of the Technical High School, offers Indianapolis Branch a meeting room for regular meetings,

or at any time desired. One of the members having a car with nickel-plated trimmings, started a discussion over the spotting of the nickel by rain drops. As his question was not answered to satisfaction, we would like to hear from others on this.

Question—When a piece of nickel-plated metal is exposed to a sprinkling rain, what causes the white spots to appear and what is the easiest way to remove these spots and bring out the luster?

Rochester Branch

Meetings of our branch were held at Hotel Seneca on October 13 and December 8,President S. P. Gartland presiding at both meetings. The October meeting was well attended. The subjects up for discussion at this meeting were the oxidizing of phosphor bronze, zinc as a protective coating on automobile parts, and single nickel salt solutions.

Mr. Raymond Lopez, who has been visiting Cuba and Mexico, gave us quite an interesting talk on his trip at the December meeting. The boys were quite interested in the trophies Mr. Lopez brought with him from Mexico, the most interesting of these being a pair of Mexican cooties dressed up in the latest fashion.

Mr. Charles Feltz, who has been a member of the Rochester Branch for several years, died on November 17. Mr. Feltz was employed at Bastian Bros. for a number of years, having taken charge of the plating department recently.

Philadelphia Branch

The monthly meeting of the branch was held December 1, with President George Gehling in the chair and a good attendance.

A letter of thank was read from Mr. Hennings for the flowers sent him during his severe illness. Mr. Henning hopes to greet his old friends at the January meeting.

Mr. Barr gave an interesting talk on plating racks as he uses for gold plating.

The main topic of the evening was the banquet, which was voted a great success in every way.

The January meeting was held on the 5th inst. Owing to the holiday season there was a small attendance. Only routine business was transacted.

Laboratory question was discussed at some length and will be continued at the next meeting.

The big time of the Philadelphia Branch on the occasion of the eighth annual banquet came off November 25, at Moseback's Hall and was a big success in every way. An educational session was held in the afternoon and was well attended. Much interest was taken in the papers read; also in the various subjects brought forth.

There was also a large display of plated ware and finishes by the members, among which were:

Delicate surgical instruments, by Mr. Barr.

Artificial limbs and braces, Mr. Bayer.

Silver plated ware, Mr. Bailer.

Lacquer finishes on wood, etc.

Cash registers and sad irons, Mr. Gabrylewitz.

Lock parts in different finishes; also a placque of finishes done in 1887, which are still in a very good condition, by Mr. Heck.

Jewelry in platinum plating and gold antique, Mr. Moreland.

Zinc and nickel-plated auto parts, Mr. Rathbone.

Floor lamps and fixtures, lacquer finshes on wood, Mr. Reis.

Antique electric fixtures, Mr. Snyder.

Silver plated ware, Mr. Uhl.

Casket hardware and electric fixtures, Mr. Nevelle.

Much credit is due the members in the spirit shown in the exhibits.

At 7:30, 125 persons sat down to a regular Thanksgiving dinner of grapefruit, celery, olives, mock turtle, lobster cutlets, roast turkey, cranberry sauce, candied sweet potatoes, peas, A. E. S. punch, oysters a la Newberg, salad, ice-cream, fancy cakes and coffee.

There surely was some noise with the rattles, horns, whistles and the bursting of the balloons with feathered pens.

The banquet was further enlivened by the singing of popular songs, led by two vocalists and Prof. Snyder's jazz orchestra, which also furnished the dance music.

During the evening two elimination prize dances were run off, which were won by a Philadelphia and New York lady. Great credit is due the New York lady in winning this prize, as her partner weighed about 250 pounds. Some job.

The Ladies' Auxiliary, composed of Mrs. Rathbone, Mrs. Gehling, Mrs. Barr, Mrs. Uhl, Mrs. Gabrylewitz, Mrs. Mott, did themselves proud in greeting the ladies and getting acquainted and intertaining them. New York, Newark and Reading Branches were well represented.

Among the visitors were the founders of the society, Mr. Charles Proctor, Messrs. Morningstar, Haddow, Flanagan, Trumbour, Sizelove, Seivering, Smith, Faint, Backus, Fischer, Kathman and others.

Thanks are due the various committees who assisted in the success of the banquet. Keep the dates open for 1923 for a good time.

Newark Branch

On Friday evening, January 19, 1923, Newark Branch, A. E. S., held its regular meeting at 17 Central avenue. In the absence of President O. J. Sizelove, who was attending the conference of the Research Committee at the U. S. Bureau of Standards at Washington, D. C., our vice-president, Mr. O. F. Carlson, occupied the chair and opened the meeting at 8:30 P. M., with 10 members present. After the routine of business had been dispensed with, the evening was spent in discussing various subjects. Among the more important were the following: Precipitating carbonates in silver solutions by adding barium cyanide; also by the freezing method; silver plating aluminum; whitening the nickel deposit. Question asked by a member as follows: Why does one-half of the work in a brass solution (run cold) plate red?

Milwaukee Branch

The Milwaukee Branch is out after the 1924 convention to be held in our city. The Milwaukee Branch is going to put in some hard work for securing the convention and we believe we are well able to put it across. We have the hearty support of the Milwaukee Association of Commerce. We also hope to get the support of the other branches.

APPLICATIONS FOR MEMBERSHIP

Cleveland Branch

Seymour C. Kneeland.....3914 Memphis Ave., Cleveland, O.

Philadelphia Branch

Active, Louis H. Dworkin.....2517 N. 31st St., Philadelphia, Pa.

Providence-Attleboro Branch

Joseph R. Cleary .....25 Agricultural Ave., Taunton, Mass.
Walter H. Pickles .....18 Handy St., Providence, R. I.
Associate, James Wm. Tyrell.....199 Bellvue Ave., Providence, R. I.

Connecticut Valley Branch

Active, Paul L. Sampsell .....Essex, Conn.

Cincinnati Branch

Active, Anthony J. McGuire.....2331 Duncan St., Louisville, Ky.

ELECTED TO MEMBERSHIP

Providence-Attleboro Branch

Arthur G. Jerome .....95 Rutherglen Ave., Providence, R. I.

Connecticut Valley Branch

John H. Gormuley .....c|o Aeolian Co., Meridan, Conn.

Philadelphia Branch

Joseph C. Underwood.....1153 Cooper St., Camden, N. J.

Chicago Branch

Earnest Atkins.....4143 West Madison St., Chicago, Ill.

Detroit Branch

Associate, Ray L. Shepard.....141 Montana Ave., Detroit, Mich.
Active, John W. Paulo .....R. F. D. No. 1, Halfway, Mich.
Active, Andrew V. Re .....Sturgis, Mich.
Active, J. A. Murphy.....2667 Montgomery Ave., Detroit, Mich.
Active, A. Fitzgerald.....470 Ouellete Ave., Windsor, Canada
Active, L. J. Moore.....2546 Springwells Ave., Detroit, Mich.

CHANGE OF ADDRESS

Chicago Branch

H. G. Stephen to .....3002 Van Buren St., Chicago, Ill.
M. V. Baldwin, to .....5343 25th St., Chicago, Ill.
J. A. Driscoll, to .....1417 Carroll Ave., Chicago, Ill.

SUSPENSIONS

Rochester Branch

Laurence Breithaupt .....43 Jewell St., Rochester, N. Y.

Grand Rapids Branch

Chas. J. Boon.....280 W. Bridge St., Grand Rapids, Mich.

HEY FELLOWS!

BANQUET

NEW YORK BRANCH

February 17, 1923

Aldine Club, 200 5th Ave., Cor. 23rd Street, New York City

Afternoon Session, - -	**3:30 P. M.**
Dinner - - -	**7:00 P. M.**
Dancing - -	**9:30 P. M.**

We extend an invitation to every branch to send us one paper of interest. The paper will be read and discussed, and verdict and topic printed in The Review.

We also extend an invitation to all members, their wives and sweethearts, to attend this banquet. The ladies' committee will entertain the ladies while the roughneck is fighting out his problem at the session.

TICKETS, $4.00 EACH

From Mr. Wm. Fischer, 300 St. Ann Ave., New York City